CALIFORNIA DIVISION OF MINES AND GEOLOGY

Fault Evaluation Report FER-74

April 5, 1978

1. Name of fault: San Fernando (Olive View & North Olive View faults).

2. Location of fault: San Fernando quadrangle, Juvenile Hall area (see figure 1).

3. Reason for evaluation: Routine re-evaluation of existing zones within 1977 evaluation area.

4. References:

Barrows, A.G., Kahle, J.E., Saul, R.B., and Weber, F.H., Jr., 1975a, Geologic map of the San Fernando earthquake area in San Fernando, California, earthquakes of 9 February 1971: California Division of Mines and Geology Bulletin 196, plate 2.

Barrows, A.G., Kahle, J.E., Weber, F.H., Jr., Saul, R.B., and Morton, D.M., 1975b, Surface effects map of the San Fernando earthquake area in San Fernando, California, earthquake of 9 February 1971: California Division of Mines and Geology Bulletin 196, plate 3.

Foundation Engineering Company, 1977a, Geotechnical report, proposed residential development, 13701 Bradley Avenue, Sylmar, California: unpublished consulting report for Frank E. Jones, 9 pages with addendum of September 8, 1977.

Foundation Engineering Company, 1977b, Geotechnical report for proposed report for proposed single family residential development, 13800 Polk Street, Sylmar, California: unpublished consulting report for Harlan G. Hice, 13 pages.

Fugro, January 28, 1975, Fault investigation, San Fernando Valley Juvenile Hall, Sylmar, California: unpublished consulting report for the County of Los Angeles, 29 pages plus 7 plates and 3 app. (Copy on file with CDMG San Francisco District, report C-286.)

Geolabs-Westlake Village, 1977, Soils engineering and fault investigation for site at 13765 Glenoaks Boulevard, Sylmar, Los Angeles, CA: unpublished consulting report for May Keenan, 13 pages.

Gorian and Associates, 1976, Engineering geologic investigation of fault rupture, Tentative Tract Number 31189, Herrick Avenue and Foothill Blvd., Sylmar: unpublished consulting report for The Trails, 8 pages.

Gorian and Associates, 1977a, Fault rupture investigation, Tentative Tract 33287, Yarnell Street and Foothill Boulevard, City of Los Angeles: unpublished consulting report for Keusder Enterprises, 6 pages, plus trench logs, with supplement of February 9, 1977.

Gorian and Associates, Inc., 1977b, Fault rupture investigation, lots 3, 7 and a portion of block 219, M.R. 55-27, Bradley Avenue, City of Los Angeles: unpublished consulting report for Dunn Development Company, 8 pages and trench logs.

Lawmaster and Company, 1977, Preliminary geology/seismicity report, proposed residential site, 16080 Yarnell Street, Sylmar, California: unpublished consulting report for Tom Brown, 12 pages.

Medall and Associates, 1977, Preliminary soils and geologic investigation, portion of lot 1, tract 26874, Polk Street and Kismet Ave., Sylmar, California: unpublished consulting report for Engineering Technology, Inc., 13 pages, with supplements of April 28 and July 18, 1977.

Smith, R.E., 1977, Earthquake seismic investigation, southwest corner of Yarnell and Bradley Ave., Sylmar, California: unpublished consulting report for R.R. Bronson, 9 pages with addendum of December 22, 1977.

Stark, J.D., 1976, Seismic report, Sylmar mobile home park, Sylmar, California: unpublished consulting report for Continental Mobile Housing, Inc., 9 pages, with maps and addendum of June 24, 1976.

Tucker, H.A., 1977, Preliminary engineering geology and seismicity report, lot 32, tract no. 18994, M.B. 547, p. 47-48, Woodcock Ave., Sylmar area, Los Angeles, California: unpublished consulting report for Patrick O'Reilly, 14 pages.

Weber, F.H., Jr., 1975, Surface effects and related geology of the San Fernando earthquake in the Sylmar area in San Fernando, CA, earthquake of 9 February 1971: California Division of Mines and Geology Bulletin 196, p. 71-96.

Yelverton, C.A., 1976a, Geologic-seismic investigation, 7.9 acre site located at 16301 Filbert Street, Sylmar, California: unpublished consulting report for North Valley Construction Company, 27 pages.

Yelverton, C.A., 1976b, Geologic-seismic investigation, Tentative Tract 33231, Glenoak Boulevard and Degarmo Street, Sylmar, California: unpublished consulting report for North Valley Construction Company, 24 pages.

Youd, L.T., 1975, Ground movement in Van Norman Lake vicinity during San Fernando earthquake in San Fernando, California, Earthquake of February 9, 1971: U.S. Department of Commerce, NOAA, p. 197-206.

5. Summary of available data:

The Official Map of Special Studies Zones, San Fernando quadrangle, was issued January 1, 1976 by the California Division of Mines end Geology. The Special Studies Zone (SSZ) established in the vicinity of San Fernando Valley Juvenile Hall was based on 1) extensive ground failure (including differential displacement across fractures), and 2) air photo lineaments identified by Barrows, et al. (1975a, 1975b). According to Weber (1975, p. 82), aerial photographs show at least two apparent fault lines ("narrow but indeterminate" lineaments). These features approximately coincide with the inferred, northeast-trending Olive View and North Olive View faults of earlier workers (Weber, p. 81). They also overlie and are parallel to the Mission Hills syncline.

At the time the SSZ map was issued, it was recognized that most of the ground fractures were the result of lateral spreading and differential settlement and few, if any, of the fractures were due to surface faulting. In fact, 1971 surface faults were not identified anywhere south of Foothill Boulevard along the trend of the postulated Olive View and North Olive View faults. Subsequent fault investigations at about 10 sites failed to reveal the existence of surface faults in the Juvenile Hall area. Figure 2 shows the location of all known trenches excavated as a result of these investigations.

The most significant investigation (Fugro, 1975) was at Juvenile Hall where a 1400-foot long, 46-foot deep trench was cut southeasterly across the site, and a shallower trench and numerous bore holes were made. Additionally, a radiocarbon age-date was determined for an unfaulted alluvial unit and the soil-profile development was analysed (p. 23).

It was determined (p. 2) that no surface faults were evident in the alluvial units, which were dated at more than 40,000 years old. Moreover, only minor faults, with offsets of less than one foot, were noted in the underlying Saugas Formation of Plio-Pleistocene age.

Other investigations were conducted by Foundation Engineering (1977a), Geolabs (1977), Tucker (1977), and Yelverton (1976a, 1976b) (see figure 2 for trench locations). With one exception, all of these reports conclude that surface faults were not present at the investigated sites and most of the reports document these conclusions with trench logs. Only the Lawmaster report (p. 3 and trench log) indicates the possible existence of a fault, based on "loose soil zones" and the mapping of others. According to H.V. Lawmaster (oral communication, 4/5/78), there is no record in their company files that the field geologist actually saw a fault in the 8-foot deep trench. Lawmaster stated that it is apparent that the fault was assumed to exist because of "disturbed soil" in conjunction with the fault trace shown by CDMG (i.e. Barrows, et al. 1975 air photo lineament). The reports by Stark (1976), Foundation Engineering (1976) and Medall (1977) also did not identify active faults as a result of trenching, but these reports are considered somewhat inadequate with regard to zone revisions.

6. Interpretation of aerial photos: Not done.

7. Field observations: Not done.

8. Conclusions:

Based on the data presented in item (5) above, it is concluded that the postulated Olive View and North Olive View faults are either concealed or nonexistent. In either case, there is no evidence that these faults constitute surface fault-rupture hazards. Even if subsurface faulting may have occurred along these faults in 1971, it is apparent that 1) the amount of subsurface displacement was relatively small (probably less than a foot) and 2) faulting did not propagate through the alluvial cover. Although the San Fernando SSZ was established under an earlier CDMG policy, the zone in the Juvenile Hall area clearly does not meet our existing policy for establishing zones only if "sufficiently active and well-defined" faults exist.

9. Recommendations

The Special Studies Zone in the vicinity of Juvenile Hall should be reduced in size. Suggested revisions are shown on figure 2. The other zone boundaries on the San Fernando quadrangle should not be modified until new data warrants additional revisions.

10. Report submitted by Earl W. Hart, 4/5/78.

Earl W. Hart

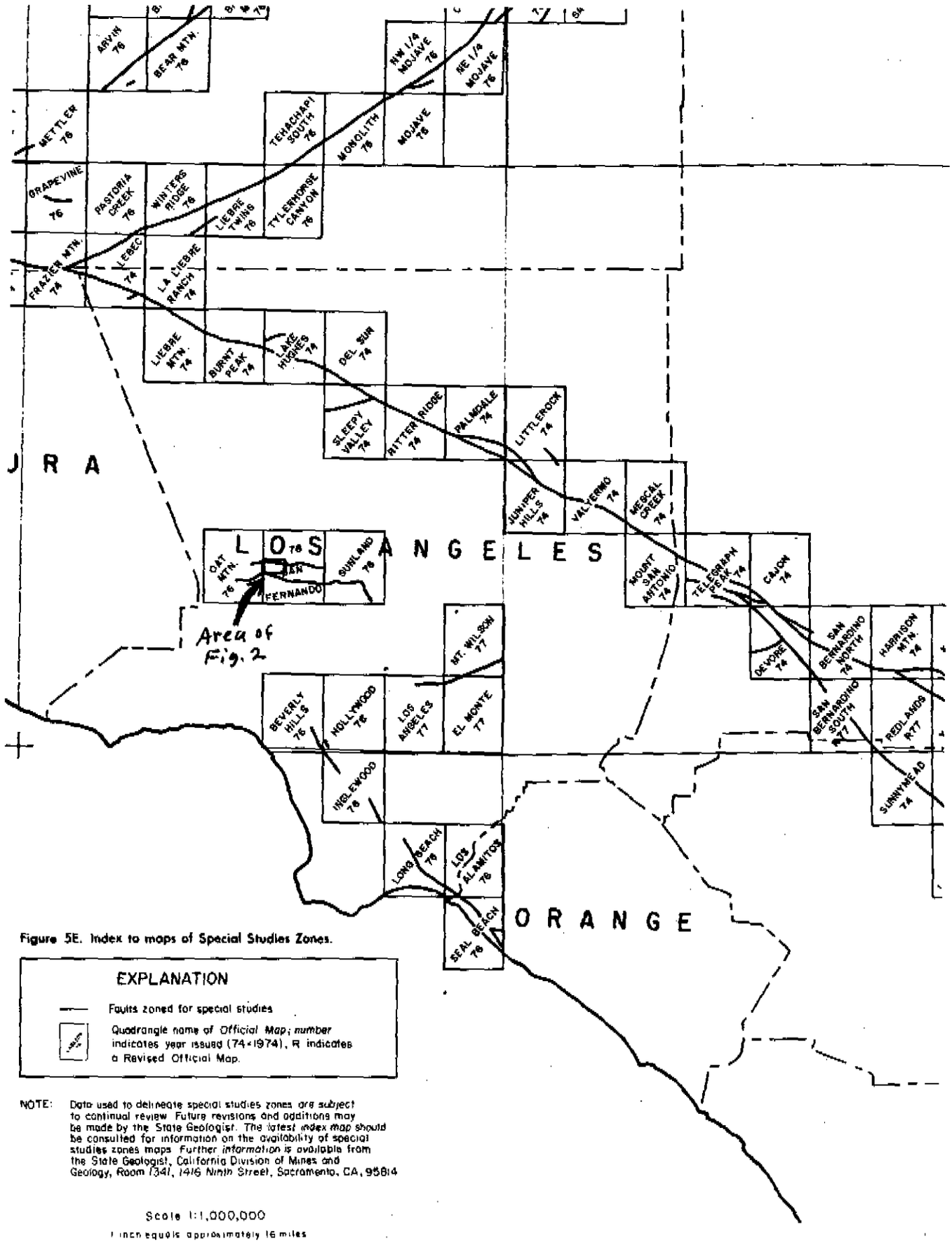

Figure 5E. Index to maps of Special Studies Zones.

EXPLANATION

— Faults zoned for special studies

Quadrangle name of *Official Map*; number indicates year issued (74=1974), R indicates a Revised Official Map.

NOTE: Data used to delineate special studies zones *are subject* to continual review. Future revisions and additions may be made by the State Geologist. *The latest index map should* be consulted for information on the availability of special studies zones maps. *Further information is available* from the State Geologist, California Division of Mines and Geology, Room 1341, 1416 Ninth Street, Sacramento, CA, 95814

Scale 1:1,000,000

1 inch equals approximately 16 miles

Figure 1 (FER-74). Index map of 552 maps showing location of Olive View & North Olive View faults (San Fernando fault).